

What is claimed is:

1. An apparatus for delivering defibrillation shock pulses, comprising:

5 pulse output circuitry for delivering shock pulses, the circuitry including a storage capacitor with positive and negative terminals and further including at least three electrode lead terminals with each such electrode lead terminal switchably connected to the positive and negative capacitor terminals;

control circuitry for switching a selected electrode lead terminal to either the positive or negative capacitor terminal to impose a capacitor voltage between electrode
10 lead terminals and deliver a shock pulse, and,

wherein the control circuitry is configured to output a shock pulse by serially switching a plurality of selected pairs of electrode lead terminals to selected capacitor terminals and thereby deliver a multiphasic shock pulse which varies both temporally and spatially.

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2. The apparatus of claim 1 further comprising shock electrodes for connection to selected electrode lead terminals and disposition in proximity to the heart.

3. The apparatus of claim 2 further comprising a device housing and wherein at least
20 one of the electrode lead terminals is connected to the device housing.

4. The apparatus of claim 1 further comprising:

a sensing channel for detecting electrical events in the heart and producing sensing signals in accordance therewith;

25 processing circuitry for detecting the occurrence of a tachyarrhythmia from the sensing signals; and,

wherein the control circuitry is configured to deliver a multiphasic shock pulse upon detection of a tachyarrhythmia.

5. The apparatus of claim 4 wherein the sensing channel is a ventricular sensing channel and the processing circuitry is configured to detect the occurrence of ventricular tachyarrhythmias by measuring a heart rate via the ventricular sensing channel.

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6. The apparatus of claim 4 wherein the sensing channel is an atrial sensing channel and the processing circuitry is configured to detect the occurrence of atrial tachyarrhythmias by measuring a heart rate via the atrial sensing channel.

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7. The apparatus of claim 1 further comprising voltage-controlled metal-oxide semiconductor switches for switching the electrode lead terminals to a capacitor terminal.

8. The apparatus of claim 1 further comprising remote gate thyristors for switching the electrode lead terminals to a capacitor terminal.

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9. The apparatus of claim 1 further comprising silicon controlled rectifiers for switching the electrode lead terminals to a capacitor terminal.

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10. The apparatus of claim 1 further comprising insulated gate bipolar transistors for switching the electrode lead terminals to a capacitor terminal.

11 The apparatus of claim 2 wherein the shock electrodes include a first electrode adapted for disposition within the coronary sinus, a second electrode adapted for disposition within the superior vena cava or right atrium, and a third electrode.

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12. The apparatus of claim 11 wherein the third electrode is adapted for disposition in the right ventricle.

13. The apparatus of claim 11 wherein the third electrode is an implantable housing.
14. The apparatus of claim 1 wherein the storage capacitor is a single capacitor.
- 5 15. The apparatus of claim 1 wherein the storage capacitor is made up of a plurality of capacitors connected in series or parallel.
16. The apparatus of claim 1 wherein the pulse output circuit includes a battery and a boost converter for charging the storage capacitor.
- 10 17. The apparatus of claim 1 wherein the electrode lead terminals are connected to a four electrode arrangement which includes the device case as one electrode and shocking electrodes disposed in the superior vena cava, the coronary sinus, and the right ventricle.
- 15 18. The apparatus of claim 1 further comprising a telemetry interface by which a particular pulse output configuration used by the apparatus may be modified.